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(71)(72) Applicant and Inventor: SCHELL, Karel, Johan [NL/NL]; Voorstraat 60, NL-2201 HX Noordwijk (NL).

(74) Agent: DE BRUIJN, Leendert, C.; Nederlandsch Octrooibureau, Scheveningseweg 82, P.O. Box 29720, NL-2502 LS The Hague (NL).

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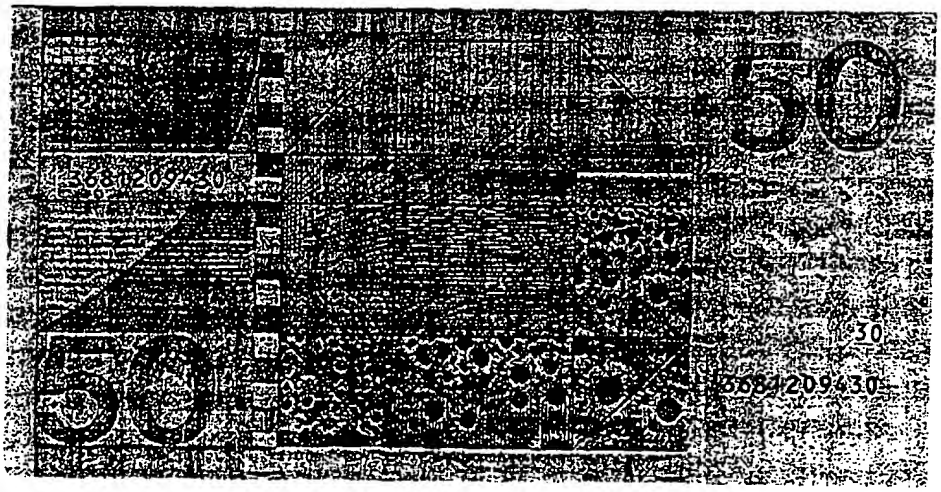
(54) Title: METHOD FOR PROTECTING A PAPER SECURITY DOCUMENT OR IDENTIFICATION DOCUMENT



(57) Abstract

In order to protect a paper-thin valuable document or identification document on which an identification mark has been placed, for example by means of a printing technique or by a laser technique, in such a way that counterfeiting is extremely difficult, at least part of said identification mark is repeated at another point by changing the thickness of the document locally. At least part of the identification mark is thus clearly linked to the paper substrate.

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METHOD FOR PROTECTING A PAPER SECURITY DOCUMENT OR IDENTIFICATION DOCUMENT

The invention relates to a method for protecting a paper-thin valuable document or identification document on which an identification mark has been placed.

The fact that all kinds of copying techniques have become available to the public means that it is becoming increasingly important to protect banknotes and documents permitting the identification of persons. Counterfeiting must become increasingly difficult, and protection must always be ahead of the equipment available to the counterfeiter. Banknotes and passports or other identification documents always have a number or other specific mark by means of which they can be recognized as unique notes or documents.

The object of the invention is to provide a method of the type mentioned in the preamble which leads to banknotes or identification documents whose abovementioned unique number or mark, or part thereof, is very difficult to counterfeit.

According to the invention, the method referred to in the preamble is characterized in that at least part of said identification mark is repeated at another point by changing the thickness of the document locally.

The repeat of said identification mark or part thereof is preferably carried out by reducing the thickness of the document by means of laser etching.

Laser etching, which is carried out by local removal of, for example, slightly less than half the thickness of the paper or plastic, clearly links the identification mark or part thereof to the paper substrate. By local thinning of the paper or paper-thin plastic, security which is linked to the identification mark is provided.

No hologram, film or kinoform image is therefore added, but only substrate material is removed to a certain depth.

As a consequence of laser etching the part of the document having the locally reduced thickness, gets a brown colour, most likely caused by the fact that the energy rich laser beam burns the substrate a little bit. The brown coloured marks, which are dark with respect to the surrounding substrate, do not have the appearance of a water mark. Comparing the printed marks with the repeated marks becomes difficult.

By exposing the part of the document on which the repeated part

of the identification mark has been placed, to bleaching or decolouring, the brown colour vanishes. A pre-treatment with a bleaching or decolourizing agent, for instance by an impregnated pad, may take place immediately after the laser etching.

Oxidizing bleaching agents are for instance peroxides, hypochlorides, persalts such as potasiumpermanganate ($KNMO_4$), potasiumpersulphate ($K_2S_2O_8$), sodium perborate ($NABO_3$), sodium percarbonate (NA_2CO_4) and ozon (O_3). It is not excluded that the substrate itself comprises an oxidizing bleaching agent, in which case the treatment with a bleaching agent immediately after the laser edging can be omitted.

The invention can be successfully used on a banknote, where the identification mark is the banknote number, and the repeated part of the identification mark obtained by changing the thickness of the document locally is the so-called check digit of the banknote number.

The invention also relates to a valuable document or identification document on which an identification mark has been placed, at least part of which is repeated by means of the method described above by changing the thickness of the document locally.

The invention will now be explained further with reference to the figure. This figure shows a copy of a banknote, on a slightly enlarged scale.

It can be seen in the figure that on the lower right-hand side the unique identification number 3681209430 is produced on the paper of the banknote by means of a printing technique. The last two digits, 30, which are known by the term "check digit", are repeated at another point on the banknote by removing the paper over part of the paper thickness, preferably no more than half the paper thickness, by laser etching. Therefore, by local thinning, additional protection which is linked to the existing mark is achieved. This local thinning constitutes an extremely great complication for a counterfeiter. The protection against counterfeiting has therefore been greatly improved by a simple trick. Instead of being made of paper, the banknote or the document can be made of plastic with the thickness and flexibility of paper.

Furthermore, it is quite possible for the identification number concerned to be applied by laser etching all the way through the paper, instead of by printing.

Methods other than laser etching for changing the thickness of the document locally, and repeating at least part of the identification

mark in this way, also fall within the scope of the inventive idea.

Claims

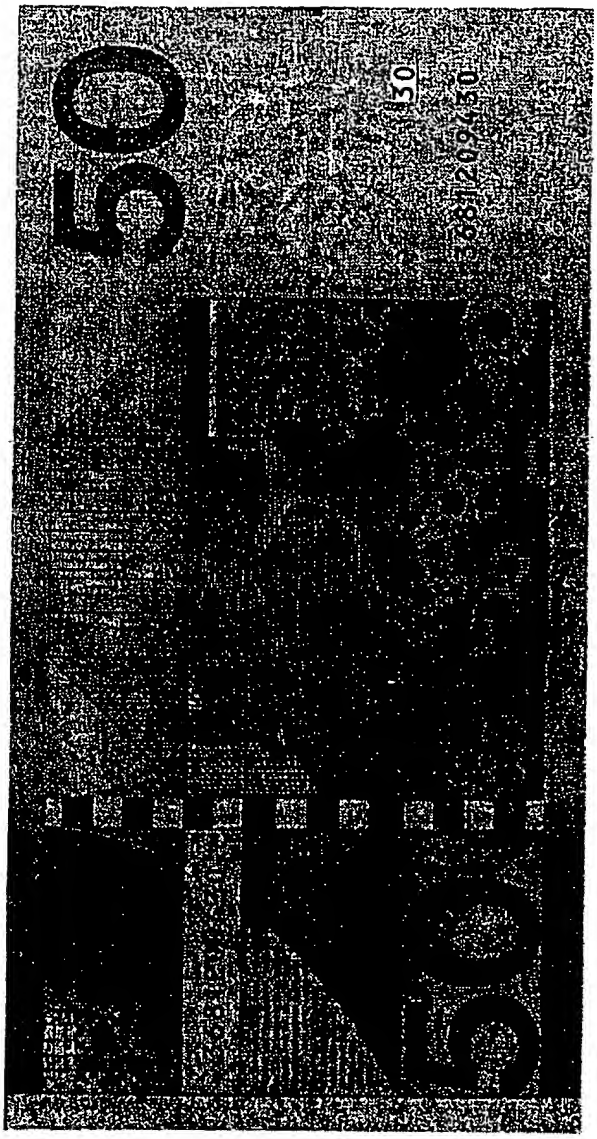
1. Method for protecting a paper-thin valuable document or identification document on which an identification mark has been placed, characterized in that at least part of said identification mark is repeated at another point by changing the thickness of the document locally.

2. Method according to Claim 1, characterized in that the repeat of said identification mark or part thereof is carried out by reducing the thickness of the document by means of laser etching.

3. Method according to claim 2, characterized in that said part of the document on which the repeated part of the identification mark has been placed, is exposed to bleaching or decolouring.

4. . Method according to one of the preceding claims, characterized in that the document is a banknote, in that the identification mark is the banknote number, and in that the repeated part of the identification mark obtained by changing the thickness of the document locally is the so-called check digit of the banknote number.

5. Valuable document or identification document on which an identification mark has been placed, at least part of which identification mark is repeated by means of the method according to one of the preceding claims by changing the thickness of the document locally.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A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B42D15/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B42D B41M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	EP 0 388 090 A (THE DE LA RUE COMPANY) 19 September 1990 see claim 6; figure 1	1,5 2
Y	DE 36 34 098 A (OESTERREICHISCHE NATIONALBANK) 16 April 1987 see column 3, line 10 - column 4, line 17; figure 1	2
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A	WO 95 26274 A (INDUSTRIAL AUTOMATION INTEGRATORS) 5 October 1995 see the whole document	2

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Evans, A

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